2011 | 21

Working Paper

Norges Bank's bicentenary project

Financial crises and monetary expansion

Ola Honningdal Grytten

1816 – 2016
Norges Bank's bicentenary project

NB NORGES BANK

Working papers fra Norges Bank, fra 1992/1 til 2009/2 kan bestilles over e-post:
servicesenter@norges-bank.no

Fra 1999 og fremover er publikasjonene tilgjengelig på www.norges-bank.no

Working papers inneholder forskningsarbeider og utredninger som vanligvis ikke har fått sin endelige form.
Hensikten er blant annet at forfatteren kan motta kommentarer fra kolleger og andre interesserte.
Synspunkter og konklusjoner i arbeidene står for forfatternes regning.

Working papers from Norges Bank, from 1992/1 to 2009/2 can be ordered by e-mail:
servicesenter@norges-bank.no

Working papers from 1999 onwards are available on www.norges-bank.no

Norges Bank's working papers present research projects and reports (not usually in their final form)
and are intended inter alia to enable the author to benefit from the comments of colleagues and other interested
parties. Views and conclusions expressed in working papers are the responsibility of the authors alone.

ISSN 1502-8143 (online)
ISBN 978-82-7553-643-1 (online)

Financial crises and monetary expansion

By
Ola Honningdal Grytten
Norwegian School of Economics and Business Administration
Norges Bank
Ola.Grytten@nhh.no

Abstract

On the basis of data from the Historical Monetary Statistics-project by Norges Bank, the present paper serves a threefold purpose. In the first place it gives an overview of financial crisis in Norway from her independence from Denmark in 1814 till present times. Secondly, historical business cycles are mapped and we conclude that the major financial crises were mirrored in significant slumps in the real economy. Thirdly, the paper investigates credit and monetary developments, and concludes that the major financial crises in Norway typically took place after substantial money and credit expansion causing overheating and bubbles to the economy.

JEL-codes: E32, E51, G01, N13, N14

Keywords: Business cycles, Supply of Money and Credit, Financial crises

Introduction

During the summer 2007 the world economy faced severe financial difficulties, mirrored in turn of peaked business cycles, falling real estate markets, and lack of confidence in the credit sector, which seemed to have over expanded due to high gearing in the economy. Thereafter, the world economy went into a global recession, real estate market and stock market crashes. The speed of the global meltdown during the summer and fall of 2008 was higher than during the Great Depression in the early 1930s.[1] Some of the most important banks in the US and Europe failed and the markets panicked. Inter-bank markets collapsed and even solid banks ran out of liquidity.

The crisis also hit Norway. However, given the smallness and openness of her economy, most economists are surprised by the relatively modest impact of the huge international problems on the Norwegian economy. Whereas our three neighboring countries Denmark, Finland and Sweden experienced substantial decline in total output reported in the second quarter of 2009 of 5.5, 6.4 and 9.4 per cent respectively over the last four quarters, the Norwegian decline was limited to 2.2 per cent.[2] Also, the financial markets seem to tackle the crisis better in Norway than most other Western countries.

The good Norwegian performance has not been a general trend during financial crises. From its independence in May 1814 till present days Norway has seen nine major financial crises and several smaller domestic and regional crises. Most of these nine busts have been international crises naturally hitting the small open Norwegian economy hard. We also find examples of financial crashes with limited impact on the real economy. These are normally stock market crashes. Norway had its biggest stock market crash ever from May 1918 to February 1923, with a 73.6 per cent fall in the main index at Oslo Stock Exchange. The great bulk of this fall came at the same time as the largest boom ever recorded in the Norwegian economy in 1919 until late summer 1920. There were also significant stock market crashes along with

[1] Eichengreen, Barry and Kevin O'Rourke, "A tale of two depressions", URL: http://www.voxeu.org/index.php?q=node/3421
[2] Eurostat and OECD, URL: http://stats.oecd.org/index.aspx?queryid=350

the Asia-crisis in 1998 and the dot.com-crisis after the turn of the twentieth century, without having any crises in the real Norwegian economy.[3]

Task of paper

International academic experts on financial crises, like Hyman Minsky, Charles P. Kindleberger and Robert Z. Aliber argue that the way to financial crises most commonly go through financial instability in different phases.[4] In the first place markets loose their long-term equilibrium through significant shocks making the economy run faster. Positive expectations make the demand for credits increase. Financial stability is lost and credit bubbles arise. In consequence, the economy will be over heated and asset bubbles are created. When the markets turn it is likely to experience credit crunch, asset crashes and recessions.[5]

In this paper we seek to find general development trends before and during financial crises in Norway, from her independence from Denmark in May 1814 until present days. Hence, we will look at key aggregates in the money and credit markets and at price developments for assets and for the economy in general. A central question is to what extent considerable financial crises, lasting for some time, have had on the Norwegian real economy. In the present paper we will first define the concept of financial crises as we see them here. Next we will give a brief overview of all of the nine major financial crises in the Norwegian economy 1814 till present. We will analyze their impact on the real economy. Finally, the paper deals with the two key financial aggregates money stock and bank loans in order to find their relevance as explanatory variables in conjunction with Minsky's and Kindleberger's theories of financial crises.

Definitions

A first step on the road to the mapping and understanding of financial crises is to define the concept. The term financial crisis broadly applies to a variety of situations,

---

3 Klovland, Jan T., "Historical stock price indices in Norway 1914-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 329-348.

4 Minsky, Hyman, "The financial instability hypothesis: Capitalistic process and the behaviour of the economy", Kindleberger, Charles P. and J.-P. Laffargue (eds), *Financial Crises: Theory, History and Policy*, Cambridge University Press, Cambridge 1982, 13-29 and Kindleberger, Charles P. and Robert Z. Aliber, *Manias, Panics and Crashes: A History of Financial Crises*, Palgrave, New York 2005, 21-32.

5 Kindleberger, Charles P. and Robert Z. Aliber, *Manias, Panics and Crashes*, 33-76.

when financial institutions or assets rapidly lose significant parts of their value. A leading international authority in research on this issue, Professor Raymond Goldsmith, defines a financial crisis as:[6]

"a sharp, brief, ultra-cyclical deterioration of almost all financial indicators, short-term interest rates, assets (stock, real estate, land) prices, commercial insolvencies and failure of financial institutions."

Another international authority in the area, Professor Charles P. Kindleberger, defines financial crises as successions of several phases: exogenous shocks, speculative manias (with euphoria, overtrading, and excessive gearing), financial distress, and finally disastrous meltdown of the economy.[7] During the 19th and the first part of the 20th centuries, financial crises were basically associated with bank panics and credit crunches. Recessions often coincided with these panics. Other situations, often considered financial crises, include stock market crashes, bursting of financial bubbles, currency crises, and sovereign defaults.

Drawing on established definitions, financial crises are associated with significant falls in financial markets. These have to be substantially larger than normal corrections. They make markets shrink through negative psychology and low expectations, making the credit market work irrational by not providing necessary credit in order to make the economy work efficiently.

Account of financial crises in Norway

In this section of the paper we will give a short overview of the most devastating financial crises in the Norwegian economy from the dependence from Denmark in May 1814 until present days. Arguably, there have been more than nine such crises. However, it is a matter of debate when problematic markets should be referred to as crises. According to our definition the problems have to be significantly worse than during normal market corrections. We have chosen the crises, which historically seem

[6] Goldsmith, Raymond W., *The National Balance Sheet of the United States*, National Bureau of Economic Research, University of Chicago Press, 1982.
[7] Kindleberger, Charles P. and Robert Z. Aliber, *Manias, Panics and Crashes*, 1-20.

to have had the largest negative impact on the business community, such as they are described by writers on Norwegian financial and economic history.[8]

The Post-Napoleonic Crisis

In May 1814 Norwegian gained independence after more than 400 years under Danish rule. It started in tragic ways. In the first place, the country was forced into a personnel union under the Swedish king until 1905. Secondly, monetary chaos and huge deficits brought the new state into a deep financial crisis, which was not solved properly until 1842.[9] During this period the economy saw booms and busts. International panics occurred in 1819 and 1837. As for Norway, lack of financial stability, currency difficulties and insufficient credits existed for most of the period.

The Danish king decided to stick to neutrality during the Napoleonic wars. This was an art of balancing as both the French and the British and their allied accused Denmark-Norway for taking side both politically and economically. From January 1st France started a total blockade of the United Kingdom, and demanded the Danish king to take part in this policy. Britain feared that Napoleon would gain control over the Danish-Norwegian fleet, which was one of the most important fleets in Europe of that time. Thus, they decided to act quickly and by surprise. In August 1814 an armada of 434 British vessels patrolled the seas around Copenhagen, demanding to borrow the Danish-Norwegian fleet until the war was over. After heavy bombardment, the Danish king surrendered and 79 fully equipped naval and merchant vessels were taken by the British.

This made the Danish king take the French side in the war. Hence, Norway involuntarily became the enemy of the United Kingdom. A blockade was set up to prevent goods being transported to and from Norwegian ports. Norway was left to itself. The money supply, which was already very high, was increased dramatically for financial purposes. This made product demand increase at the same time as supply decreased.[10] As result, inflation gained pace as money depreciated rapidly. During the fall of 1813 the Rigsdaler had depreciated with more than 99 per cent. Two attempts

---

[8] Grytten, Ola H., "The economic history of Norway", URL: http://eh.net/encyclopedia/article/grytten.norway

[9] Eitrheim, Øyvind, "Fra Peder Anker til stabilitet i pengevesenet", Eitrheim, Øyvind og Jan F. Qvigstad (eds), *Tilbakeblikk på norsk pengehistorie*, Occasional papers No 37, Norges Bank, Oslo, 1-18.

[10] Hodne, Fritz and Ola H. Grytten, *Norsk økonomi i det 19. århundre*, Fagbokforlaget, Bergen 2000, 21-34.

at stabilizing the currency failed within 1816. Inflation rates reached more than 150 per cent in 1812.[11]

After independence from Denmark, Norway had to set up her own institutions, including her own monetary system. The central bank was set up by law from 1816. It gained issuing monopoly from the start. Norway adopted a silver standard with the speciedaler as key currency. However, due to high inflation, monetary chaos and lack of confidence in the new state, it took 26 years before the silver standard was fully reinstated in April 1842. At that point the speciedaler was made convertible at its par silver value. In order to pay back its international debt and provide necessary capital both for the state and the central bank, Norway had to take up loan with high risk premium abroad. The domestic financial system was dependent on the central bank, which also acted as the only domestic commercial bank until 1848. The bank was forced to run a careful monetary policy in order to reach par value of the speciedaler. Thus, domestic credit was scarce and international credit expensive. As result, the Norwegian economy went into stagnation, which lasted until the end of the 1830s.

The 1848 Crisis

The next significant financial crisis took place around the European revolutionary year 1848. From the mid 1840s towards the end of the decade continental Europe experienced a huge increase in prices on crops and potatoes. This was due to both supply side and demand side shocks in the economy. In the first place, several years of bad harvest made prices step up significantly. Secondly, the Corn Laws, protecting domestic producers, were abandoned in the UK, and thus a substantial increase in demand for crops in international markets took place. European convergence of agricultural prices gained pace. In consequence, from early 1845 till the spring of 1847 prices on rye and wheat in big European continental cities doubled. Still working class families still used 50 per cent or more of their income on food and other agricultural products in most European countries.[12] With increasing prices on price inelastic products as food, they had to reduce their demand of industrial products. Hence, the industrial sector experienced a negative demand shock, leading to insolvencies, bankruptcies and a credit crisis.

---

[11] Eitrheim, Øyvind, “Fra Peder Anker til stabilitet i pengevesenet”, 12-13.

[12] Merriman, John, *A History of Modern Europe: From the Renaissance to the Present*. W.W. Norton, New York, 1996, 718-724.

The problems strongly contributed to political discontentment and a revolutionary wave sweeping over continental Europe. In France the monarchy was abolished under the February revolution of 1848. Upraises took place in Italy, Austria-Hungary and Prussia. Uncertainty increased. International trade decreased and the financial markets struggled with lack of trust and liquidity. In Austria-Hungary the monarchy did not manage to gain full control until 1851, when the monarchy was reestablished in 1852 in France.[13]

In Norway lack of confidence in the speciedaler led to a fall in the silver reserves kept by the central bank from 1846 onwards. To avoid over issuing of money, the central bank tightened monetary policy. The negative shift in international demand caused exports to fall and the silver reserves to shrink even more. Thus, the monetary policy had to become even tighter. Increasing lack of confidence to the Norwegian currency during the international financial crisis made the situation even worse, and substantial silver exchange took place.[14] Thus, the contractionary spiral in the money market continued. In consequence domestic demand also failed and economic activity fell substantially. In order to avoid further escape of capital, silver redemption was suspended in the central bank's regional offices in Bergen and Oslo, when the interest rates were raised at the head quarters in Trondheim.[15] Credit granted was radically reduced. Thus, economic activity suffered even more and insolvencies and bankruptcies became daily affairs.

The problems ended after the government negotiated a loan of 0.6 million speciedaler in London and thereafter a 1.5 million speciedaler long-term loan at Hambro's in Denmark. The Ministry of Finance distributed the credit through governmental commissions.[16] 1849 was the last crucial year of crisis. However, the shock waves had their impact on the Norwegian economy for another couple of years.

The Crimean Crisis

Another severe financial crisis hit the world economy after the Crimean War October 1853 - February 1856. The war was fought between Russia on the one side and an alliance of the United Kingdom, France, the Ottoman Empire and the Kingdom of

[13] Tocqueville, Alexis de 1893. *Recollections: The French Revolution of 1848*. Doubleday, Garden City NY 1970, 98 and Bideleux, Robert and Ian Jeffries, *A History of Eastern Europe: Crisis and Change*, Routledge, London 1998, 295-296.
[14] Rygg, Nicolai, *Norges Banks historie*, vol I, Norges Bank, Kristiania 1918, 289-308.
[15] Hodne, Fritz and Ola H. Grytten, *Norsk økonomi i det 19. århundre*, 216-217.
[16] *Parliament Proposition* No 43 1890.

Sardinia on the other. The conflict was officially triggered by conflicts of interests of control over the Holy Sepulchre in Jerusalem. However, the underlying real reason for the war was the long-running contest between the major European powers for influence over territories of the declining Ottoman Empire. Most of the battle took place on the Crimean Peninsula, which the Russians had conquered from the Ottomans in 1774 and annexed in 1785. Additionally, there were smaller campaigns in West Turkey, the Baltic Sea, the Pacific Ocean and the White Sea.

The immediate impact of the war on the international economy was chiefly positive, and as a small open economy Norway experienced favorable years. The demand for services by the Norwegian merchant fleet stepped up and the freight rates increased substantially.[17] The upheaval came together with a new gold rush in California, also fueling the world economy. The growth in business activity was to a large extent financed by growth in short-term credits. Speculative bubbles were born due to high expectations of increasing prices on assets, export and import goods.[18] In Scandinavia, Bergen became a centre of speculation in prices on crops and freight rates. Substantial parts of this speculation were financed by short-term credits.

After the war, prices fell considerably. Speculators ran into heavy losses. Ship owners and importers with large stocks of rye and wheat from the Black sea became losers, as they had traded at very high market prices, which fell dramatically. In Bergen alone 88 traders and investors went bankrupt between 1856 and 1859. [19]

During the first stage of the crisis many Norwegian merchants and investors were saved by blanco credits granted in Hamburg and London. However, when an international finance crisis started its global spread from New York during the spring of 1857, London and Hamburg, along with other financial centers, were hit devastatingly. Almost 60 per cent of the most important short-term creditors for Norwegian companies in Hamburg had to cease their activities. Other creditors demanded rapid cash redemption of their loans to Norwegian merchants, investors and manufacturers. By the spring of 1857 the crisis had reached the capital Christiania and all other significant Norwegian cities. Besides a serious credit crunch real estate prices stagnated after a booming decade.

---

[17] Klovland, Jan T., “New evidence on the causes of the fluctuations in ocean freight rates in the 1850s”, *Explorations in Economic History*, vol 46, 2009, 266-284.
[18] Calomiris, Charles W. and Larry Schweikart, "The panic of 1857: Origins, transmission, and containment". *Journal of Economic History*, vol 51, No. 4, 1991, 807–834.
[19] Hodne, Fritz and Ola H. Grytten, *Norsk økonomi i det 19. århundre*, 167-168.

The Norwegian government, the trade and employers association, Handelens Venner, and the new established major bank, Den norske Creditbank, joined forces in order to avoid financial panics and a total stop in the credit market. Guaranties were granted, and 320 foreign creditors with claims on 900 Norwegian companies were paid the equivalent of 1.65 million speciedaler. In 1858 the parliament approved a loan from Hambro & Son, London of 3.6 million speciedaler in foreign currency. During the late summer 1858 most of the financial difficulties ceased in Christiania, while the problems lasted for another two years in Bergen.[20] The negative effects on industrial output lagged somewhat from the financial markets and probably reached its minimum during winter 1860-1861. House prices stagnated in the late phase of the crisis, and fell until 1862.

The long depression

The long depression reflects a series of downturns in output along with a deflationary tendency in the world economy from the mid 1870s until the early 1890s. It saw several international financial panics, e.g. in 1882 and in 1893, which strongly contributed to the contraction. The depression hit harder in the United Kingdom and in economies dependent on their markets than in most other countries and is often seen as part of the relative British stagnation during the last decades of the nineteenth century.[21] As a small and open economy, heavy dependent on trade with the United Kingdom, Norway suffered considerably from this crisis as the per capita real GDP level from the top year 1876 was not regained before 1888.[22] Deflation was severe and it took prices 38 years to come back to their peak 1874-level.[23] Additionally, the early adoption of gold, late industrialization and transformation from sailing to steam in the merchant fleet are explanatory variables for the deep crisis in Norway in the second half of the 1870s and most of the 1880s.

[20] Seip, Jens Arup, "Saint Simon, Credit Mobilier og Den norske Creditbank", *Historisk tidsskrift*, vol 36, 1957, 513-538.
[21] Musson, A.E., "The Great Depression in Britain, 1873-1896: A Reappraisal". *The Journal of Economic History*, vol 19, No 2, 1959, 199–228 and Davis, Joseph, "An Improved Annual Chronology of U.S.; Business Cycles since the 1790s". *The Journal of Economic History*, vol 66, No. 1, 2006, 103–21.
[22] Grytten, Ola H., "The gross domestic product for Norway 1830-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 241-288.
[23] Grytten, Ola H., "A Norwegian consumer price index 1819–1913 in a Scandinavian perspective", *European Review of Economic History*, vol 8, 2004, 61-79.

According to Norwegian county reports the economy had a strong boom 1871-1873 with "fairytale" profits. Then, during 1874 and 1875, a clear reaction and correction was reported to be under its way. Huge public investment and favorable harvests in agriculture and fisheries made 1876 the peak year of GDP. The situation in the early 1870s clearly was one of a booming economy with bubble tendencies and high investment rates prolonged by good harvests.

The international economy was running fast under British leadership. Credits were given at low interest rates and the monetary expansion was substantial. In July 1869 the key interest rate of the central bank was 5.65 per cent. During the following boom and financial expansion it stabilized below four per cent for a long period of time in 1871-1873.[24] From January 1869 till January 1874 money supply increased substantially by more than 53 percent.[25] These years made up a huge contrast to the depression years to come. According to business cycles research, Norway experienced two significant contractions from 1876 till 1879 and from late 1887 till late 1888. In addition there was a milder downturn from late 1882 till January 1887.[26]

Both the boom and the contraction were to a large degree imported from the world's leading economy and Norway's most important trading partner, the United Kingdom. Bad years caused Britain to import less timber, fish and freight services from the merchant fleet. Thus, all the three most important Norwegian export industries were severely hit. Norway, Denmark and Sweden also adopted the gold standard earlier than most other countries, in January 1874. Norway also introduced the krone as its new currency and joined the Scandinavian currency union in 1875 effective from 1877. The international adoption of gold gave a considerable increase in the international demand for gold. Thus, gold currencies appreciated relative to silver currencies. In consequence, they lost competitive power and negative capital movements took place. In order to protect the krone interest rates were raised from 3.5 to 7.0 per cent between 1872 and 1877. From January 1874 to January 1879 money supply contracted almost 28 per cent.

---

[24] Klovland, Jan T., "Short term interest rates in Norway 1818-2007", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway- Part II*, Occasional Papers No 38, Norges Bank, Oslo 2007, 42-108.

[25] Klovland, Jan T., "Monetary aggregates in Norway 1819-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 181-240.

[26] Klovland, Jan T., "A chronology of cycles in real economic activity for Norway, 1867-1914", *Scandinavian Economic History Review*, No 3, 1989, 24-31.

Another important reason for the bad performance in Norway was the late transition from sail to steam vessels in the merchant fleet.[27] Norway had specialized in transporting timber and wooden products on sailing vessels within the British Empire. Substantial capital was invested in vessels constructed for this kind of trade. When British and continental imports of timber was reduced during the downturn of the business cycle, the Norwegian merchant fleet suffered devastatingly. Several banks went bankrupt, particularly in the Agder-area in the very south of the country, where the merchant fleet was the dominant factor in business life. In Arendal, the second biggest city in the area, three out of four banks went bankrupt during the financial crash in 1886.[28] This made the transition over to more competitive steam vessels even more difficult and further delayed the process. The population level in the south stagnated and did not reach its 1875 level until 1930. Belgium's steam tonnage surpassed the sailing tonnage in 1878. The same happened for the United Kingdom in 1883, Germany in 1884-1885, Denmark in 1893 and Sweden in 1900. As for Norway steam became dominant in 1907. From the late 1870s until 1912 the Norwegian share of the world merchant fleet was reduced by more than one third.

The Kristiania Crisis

The next considerable financial crisis took place from the fall of 1899 and lasted until 1905. It was a combination of a credit and private estate crisis with effects on the real economy. The money, credit and private estate markets lost their financial stability during a strong expansion period in the 1890s. Financial bubbles were created and crashed rapidly during the last part of 1899 and in the next years to come.

An initial reason for the creation of bubbles ending in severe financial crashes was an important change in monetary policy in 1893. When the gold standard was introduced in January 1874 parliament had decided to maintain the quotient-system from the silver standard prior to 1874. According to this system there had to be a minimum relation between metal reserves controlled by the central bank and the volume of issued notes. This quotient was set to 2:5.[29] The system was pro-cyclical, as the central bank had ran deflationary monetary policy in times of low metal

[27] Fischer, Lewis R., and Helge W. Nordvik, "Maritime transport and the integration of the North Atlantic Economy, 1850-1914", Fischer, Wolfram et al, *The Emergence of a World Economy*, KCW, Wiesbaden 1986, 526-531.

[28] Johnsen, Berit Eide, *Rederistrategi i endringstid: sørlandsk skipsfart fra seil til damp og motor, fra trew til jern og stål 1875-1925*, University of Bergen, Bergen 1998.

[29] Søbye, Espen: "Kristianiakrakket 1899", *Samfunnsspeilet*, No. 1, 1999.

coverage. This pro-cyclical system in fact made the long depression deeper than necessary.

The rule was abandoned in 1893, and the difference system was introduced. According to this system parliament could decide excess note issuing, independent of metal coverage. This made way for an expansionary monetary policy with low interest rates and money and credit expansion. At the same time agriculture saw rapid growth in productivity and labor was transferred to fast growing manufacturing industry in urban areas.[30] From 1890 till 1899 the population of Kristiania alone stepped up by 47 per cent.

The demand for dwellings and commercial buildings increased dramatically. New buildings were financed by cheap credits. In February 1894 money supply (M0) was 53.8 million NOK. In September 1899 it had increased to 86.7 million, an increase of more than 61 per cent during five and a half year.[31] Wages stepped up substantially in Kristiania and the other main cities. House prices increased with 73 per cent 1895-1899 in the capital and 40 percent in Bergen 1894-1898.[32]

The expansion in the private estate market was basically organized by stock emissions. Emissions in new companies in Kristiania were doubled 1897-1899.[33] Six new commercial banks were established in the city between 1896 and 1898. They specialized in financing projects using stocks as collateral and providing third priority loans to house-building companies. All of these banks went bankrupt during the following asset crash.

During the winter season 1898-1899 markets became nervous, and it became increasingly more evident that market prices on assets were too high. During 1899 the bubbles crashed. Prices on both commercial buildings and dwellings fell considerably. Dwellings fell as much as 59 per cent in Kristiania 1899-1904 and 43 per cent in Bergen 1898-1905. The annual number of bankruptcies in Norway stepped up from 241 in 1890 to 736 in 1903. [34] Heavy losses made banks collapse. The crisis in the real estate and the financial markets continued until 1905. Bank losses were

---

[30] Gerdrup, Carsten, "Three episodes of financial fragility in Norway since the 1890s". *BIS Working Papers*, No. 142, 2003. Basel

[31] Klovland, Jan T., “Monetary aggregates in Norway 1819-2003”, 211-236.

[32] Eitrheim, Øyvind and Solveig Erlandsen, “House price indices for Norway 1819-2003”, Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers, No, 35, Norges Bank, Oslo 2004, 349-378.

[33] Knutsen, Sverre, “Kristianiakrisen 1899: En revurdering av den historiske litteraturens årsaksforklaringer”, Oslo University, Oslo 2007.

[34] Eitrheim, Øyvind and Solveig Erlandsen, “House price indices for Norway 1819-2003”, 372-375.

high and the economy stagnated.

The post-war depression

Whereas the Kristiania crisis was a domestic happening, the crisis of the 1920s was an international downturn. However, in Norway it was made harder and even sustained by pro-cyclical monetary policy. At the beginning of World War I Norway, like many other countries, suspended gold redemption of its currency. In order to maintain demand and finance the costs of war, both neutral and involved countries ran expansionary monetary policy. The agenda was low central bank interest rates, high credits and heavy budget deficits. Central bank rates were set down, credits were increased and heavy budget deficits prevailed.[35]

The money stock stepped up by a factor of five in Norway 1914-1920. Thus, demand shifted upwards due to the strong monetary expansion, whereas supply shifted downwards due to the heavily constrained supply during the war. Thus, consumer prices sky-rocketed and increased with more than 200 per cent, and wholesale prices with more than 300 per cent, from the outbreak of the war till late summer 1920. The krone depreciated rapidly with more than 50 per cent relative to gold from the late phase of the war until the autumn of 1920.[36] Real interest rates in Norway came down to below minus 30 per cent. In consequence, saving was low and investments high, given the stressed market situation.

Accumulation of money led to a short and hectic boom when supply was released after the war until late summer 1920. Investments increased with 34 percent in two years from 1918 until 1920. Imports into Norway became more than twice as high as exports in 1919.[37] Finally, during the late summer and fall of 1920 both domestic and international markets turned around rapidly.

Along with the international recession, the Norwegian central bank decided to adopt a deflationary monetary policy in order to bring the krone back to its par value in gold. Thus, the krone had to appreciate by 100 per cent. The deflationary policy was carried out in two phases. The first started in the summer of 1920 with increasing interest rates and lower volumes of credit granted from the central bank. During the

[35] Romer, Christina D., "World War I and the postwar depression; A reinterpretation based on alternative estimates of GNP". *Journal of Monetary Economics*, vol 22, No. 1, 1988, 91-115.
[36] Hodne, Fritz and Ola H. Grytten *Norsk økonomi i det 20. århundre*, Fagbokforlaget, Bergen 2002, 93-116.
[37] Grytten, Ola H., “The gross domestic product for Norway 1830-2003”, 274-285.

first months the krone appreciated considerably. However, this development was not steady and the krone started to fluctuate substantially.

The international crisis along with the tight monetary policy led to huge financial problems. As strong inflation turned to hard deflation and nominal interest rates were set up, real interest rates peaked at close to 40 per cent in the early 1920s. Investments were reduced to a half, unemployment rates and bankruptcies were recorded at all time high levels as both of them were multiplied by a factor close to seven from 1919 until 1926. Bank losses reached seven per cent of GDP in 1923 and 1925, by far the highest losses ever in Norway. Hence, the central bank was forced by the depressed market situation to bring the deflationary monetary policy to a pause during the spring of 1923.[38]

Foreign trade revived, and the heavy deficits ceased. Unemployment and financial losses fell. This gave way to a new period of deflationary policy, at the same time as the world economy performed far better. A new round of deflationary policy was introduced, and from late 1924 until May 1928, the Norwegian krone regained its par value to gold. The price had been a devastating financial crisis, with stagnant GDP, investments and foreign trade, deflation, more than one hundred bank failures and economy wide unemployment rates reaching more than eight per cent on an annual basis in 1926 and 1927. The depression of the 1920s stands out as the worst financial crisis recorded in Norway. According to national accounts only Britain was hit harder in the early 1920s, whereas Norway performed even worse than her in the mid-1920s.

The great depression

Despite huge financial crises in the interwar period, both the Norwegian and the international economy saw periods of very high growth between the hard years. From the late 1920s, Norway took part in a significant international boom. From 1929 this was turned into the strongest global depression recorded in modern history ever. The international downturn started after the overheated economy with strong asset bubbles collapsed in the US from October 1929.

International financial instability gave huge capital inflow to the US and France in the 1920s. One source was war reparations paid by Germany to France and

[38] Hanisch, Tore Jørgen, Espen Søilen and Gunnhild Ecklund, *Norsk økonomisk politikk i det 20. århundre*, Kristiansand, Høyskoleforlaget 1999, 63-90.

Belgium, another was inter-allied debt paid from European allied powers to the US. In addition both the US and France had undervalued currencies and were protectionists. In consequence the two powers accumulated capital, when most of Europe lost their liquidity and were dependent on short-term credits granted by American banks.

The money and credit expansions during the "happy 20s" were reversed by contractions after October 1929. The New York Stock exchange fell by 86 per cent until the summer of 1933. GDP per capita fell by more than 30 per cent in North-America, and by 15-17 percent globally.[39] US banks were not able to renew their credits to Europe as almost 10 000 of them went bankrupt, whereas another 14 000 needed public protection. With 95 per cent of American banks in liquidity shortage, the problems were transmitted to Europe, which saw currency crises in 1930 -1931.[40]

Whereas the crisis of the 1920s was harder in Norway than in most other countries, the depression of the 1930s was milder. This also applies for the United Kingdom and the Nordic countries, except for Sweden.[41] The relative success is best explained by the early abandonment of gold in these countries in September and October 1931. Hence, they were able to monitor a less tight and more inflationary monetary policy than many other countries. This gave fuel to a less devastating recession, a milder deflation and an earlier and more rapid recovery.

However, as a small open economy Norway suffered from the international melt down from the summer of 1930. In 1931 exports and manufacturing output fell by 12 and 22.5 percent respectively, when investments contracted with 28.4 percent 1930-1932. Total unemployment came close to eleven per cent in 1933.[42] In sum, consumer prices fell by 54.2 percent from late 1920 until early 1934. However, the banking system survived the crisis of the 1930s far better than in almost any capitalist country. This can be explained by the early abandonment of gold, active central bank policy and careful banks.[43]

The depression in Norway reached its turning point in December 1932, a few

---

[39] Maddison, Angus, *The World Economy: Historical statistics*, OECD, Paris 2006.
[40] Kindleberger, Charles P., *The World in Depression: 1929-1939*, University of California Press, LA 1986, 288-306.
[41] Grytten, Ola H., "Why was the great depression not so great in the Nordic countries?", *Journal of European Economic History*, vol. 37, No. 2, 1988.
[42] Grytten, Ola H. and Camilla Brautaset, "Family households and unemployment in Norway during years of crisis: new estimates 1926-1939, *The History of the Family*, vol 5, No. 1, 23-53.
[43] Knutsen, Sverre and Gunnhild Ecklund, *Vern mot kriser: norsk finanstilsyn gjennom 100 år*, Fagbokforlaget, Bergen 2000, 85-136.

months later than in the UK.[44] The recovery was rapid. However, unemployment stayed persistently high until 1941, despite considerable growth in employment.

The banking crisis 1987-1993

After World War II, credit markets were significantly more regulated than previously, both domestically and internationally. An important goal for Norwegian politicians was to maintain low interest rates in order to motivate investments. Thus, the government set the central bank rate, and they did so below the market clearing level. In consequence, they created an incentive to invest and not to save money. Thus, in order to stabilize the financial market they were forced to maintain a system with tight credit restrictions.

During the international neo-liberalistic wave, as an answer to the shortcomings of the regulated economy, from the late 1970s, Norway deregulated its credit market. However, still the parliamentary majority cling to politically decided central bank interest rate, below the market rate. Real interest rates after tax were negative. This in term created a greater credit boom in Norway than in most other countries during the boom of the 1980s.[45] At the same time oil prices were at record peak levels and the inflow of capital to Norway was considerable.[46] The money stock (M2) increased by 66 per cent from December 1981 until December 1985, and a rapid growth continued for more than a year. Credit granted by banks increased by 164 per cent from 1983 until 1987.[47] The consequences of this development were not only a boom, but also over-heating of the economy and asset price bubbles. From 1980 till 1987 house prices in Norway stepped up by 211 per cent.[48] Stock prices at Oslo Stock Exchange were 405 per cent higher in September 1987 than in December 1980.[49]

In December 1985 oil prices started to fall dramatically after levels around 35-40 US-dollars per barrel since 1979. In 1986 oil prices came under nine US-dollars

---

[44] Klovland, Jan T., "Monetary policy and business cycles in the interwar years: the Scandinavian experience", *European Review of Economic History*, vol. 2, No. 3, 1998, 309-344.

[45] Søilen, Espen, *Hvorfor gikk det galt?: statens rolle i utviklingen av norsk næringsliv etter 1945*, Gyldendal, Oslo 2002, 181-223.

[46] Knutsen, Sverre and Gunnhild Ecklund, *Vern mot kriser*, 225-268.

[47] Eitrheim, Øyvind, Ola H. Grytten and Jan T. Klovland, "Historical monetary statistics for Norway – some cross checks of the new data", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway – Part II*, Occasional Papers, No. 38, Norges Bank, Oslo 2007, 412-416

[48] Eitrheim, Øyvind and Solveig Erlandsen, "House price indices for Norway 1819-2003", 372-375.

[49] Klovland, Jan T., "Historical stock price indices in Norway 1914-2003", 329-348, Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers, No, 35, Norges Bank, Oslo 2004

per barrel. In consequence, Norwegian foreign trade went from high surpluses to devastating deficits. The government had to tighten fiscal policy. During May 1986 Norway saw both a governmental crisis, significant reductions in her budgets and a devaluation of around ten percent of the krone. Inflationary economic policy was substituted for both tight fiscal and monetary policy. October 19th 1987 the Dow Jones index in New York fell by 22.6 per cent. The following day the main stock index at Oslo Exchange fell by 20 per cent.[50]

Norwegian banks had expanded rapidly both on the domestic and the international arena during the liberalization of the credit markets in the 1980s. In order to maintain their activities abroad, Norwegian banks had to find customers. So they did: marginal customers with whom native banks did not want to do business were taken on. Losses were severe, particularly after the international business cycle turned in 1987/1988. In addition Norwegian banks experienced losses in a segment where they hadn't lost money of any significance since the Kristiania crisis, i.e. the real estate market. As the bad years approached the economy the government ran tight fiscal and monetary policies. Unemployment rose to heights comparable with those of the interwar period. Nominal house prices fell with more than 30 percent 1987-1992. Real prices contracted around 45 per cent. Norway experienced its worst real estate crash ever recorded. GDP stagnated and investments fell by 21.7 per cent.[51]

The crisis hit harder in Norway and the Nordic countries than in most western economies. It became the longest and most severe financial crisis in Norway since the 1930s and the worst banking crisis since the 1920s. When commercial banks typically lost 0.3-0.4 percent of their loans in the early 1980s, they lost 5.8 percent in 1991. Savings banks typically lost 0.2 per cent in the early 1980s and 2.7 per cent in 1989.[52] The state had to intervene in the credit market. Two of the three largest commercial banks were taken over by the state in 1991 and the latter of the three in 1993.

The present financial crisis 2007-2009

The present crisis is the worst global financial meltdown in peacetime since the 1930s, with stock market crashes, real estate market crashes, credit crisis and a

---

[50] Hodne, Fritz and Ola H. Grytten, *Norsk økonomi i det 20. århundre*, 271-278.
[51] Hanisch, Tore J., Espen Søilen og Gunnhild Ecklund, *Norsk økonomisk politikk i det 20. århundre*, 255-362.
[52] Stortingsmelding 39/1993, *Bankkrisen og utviklingen i den norske banknæringen*, Finansdepartementet, Oslo 1994.

strongly negative business cycle. However, the impact on the Norwegian economy has so far been limited, except for the stock market.

The combination of credit market innovations and inflation targeting with low inflation, led to financial instability through low interest rates and a rapid increase in credits worldwide. From autumn 1992 until autumn 2008 the Norwegian credit volume (C2) almost quadrupled. Hence, asset bubbles came to being. Assets were financed by continuously more generous loans, and the sub-prime concept of the market was included in these arrangements.[53] From January 2003 till July 2007 the Main stock index at the Oslo Exchange showed an annual growth rate of 45 percent. House prices had an annual growth rate of close to 12.5 per cent from January 1993 until August 2007, when inflation ceased to less than two per cent annually in parts of the first decade in the 2000s. This means that nominal house prices were close to five times higher, when real prices were three times higher in July 2007 than in January 1993.[54] In fact, Norwegian house prices increased more than those in most other countries in the world, and twice as much as in the US 1993-2007.[55]

The housing bubble in the US was to a large degree financed by investment banks buying loan portfolios from ordinary banks. These were funded by loans to American investment banks in the international money markets. The risk was considered limited since house prices grew almost continuously.[56] However, when the markets turned, the investment banks ran into a liquidity crisis. In 2008 all the big investment banks in the US failed. Bank losses rocketed in the international arena, and important European, Asian and Latin-American banks had to seek protection or give up.[57] Money market rents showed a steep increase.

During the autumn of 2008 credit markets ceased to function, and they had to be rescued by huge liquidity injections by central banks and generous government measures and guarantees. By this action, the world economy was rescued from a severe liquidity crisis. However, stock market crashed rapidly and real estate prices

---

[53] Røed, Larsen, Erling and Jon Mjølhus, *Finanskrise!: lånefest, boligboble – og dagen derpå*, Gyldendal, Oslo 2009, 84-96.
[54] Grytten, Ola H., "Boligkrakk og finanskrise i historisk perspektiv", *Samfunnsøkonomen*, vol. 63, No. 4, 2009, 39-50.
[55] Grytten, Ola H., "Boligboble? Empiriske indikatorer i historisk perspektiv", *Magma*, vol 12, No. 5, 2009, 26-39.
[56] Zandi, M., Financial shock: *A 360 degree look at the subprime mortgage implosion and how to avoid the next financial crisis*, FT Press, Upper Saddle River, NY 2009.
[57] Sorkin, Andrew Ross, *Too Big to Fail: Inside the Battle to Save Wall Street*, Allen Lane, New York/London 2009.

collapsed. The Dow Jones index contracted with 43 percent from January 2008 till the end of November the same year. In Norway the stock market collapsed with 64 percent in six months from May 22nd till November 20th 2008. This made the stock market crash the fastest and second biggest recorded in Norway ever, only inferior to the crash 1919-1921, with a fall off 73.6 per cent on monthly data. Thus, the stock market crash was larger in Norway than in most other countries, but of course far less than in Iceland were stocks crashed with 76 per cent during one day.

House prices started to fall dramatically in most countries in 2007. In the US the fall has been recorded to about 40 per cent. Spain, Ireland and Denmark have seen comparable crashes. In the Baltics the real estate markets have collapsed even more. As for Norway, a fall in nominal house prices of 14 percent, were recorded from August 2007 till December 2008. During the same period the fall in real house prices were recorded to 18 per cent. However, due to a rapid halt in the construction of new buildings, fewer units offered for sale and very low interest rates initiated by central banks world wide in late 2008, the Norwegian crash stopped in January 2009.[58]

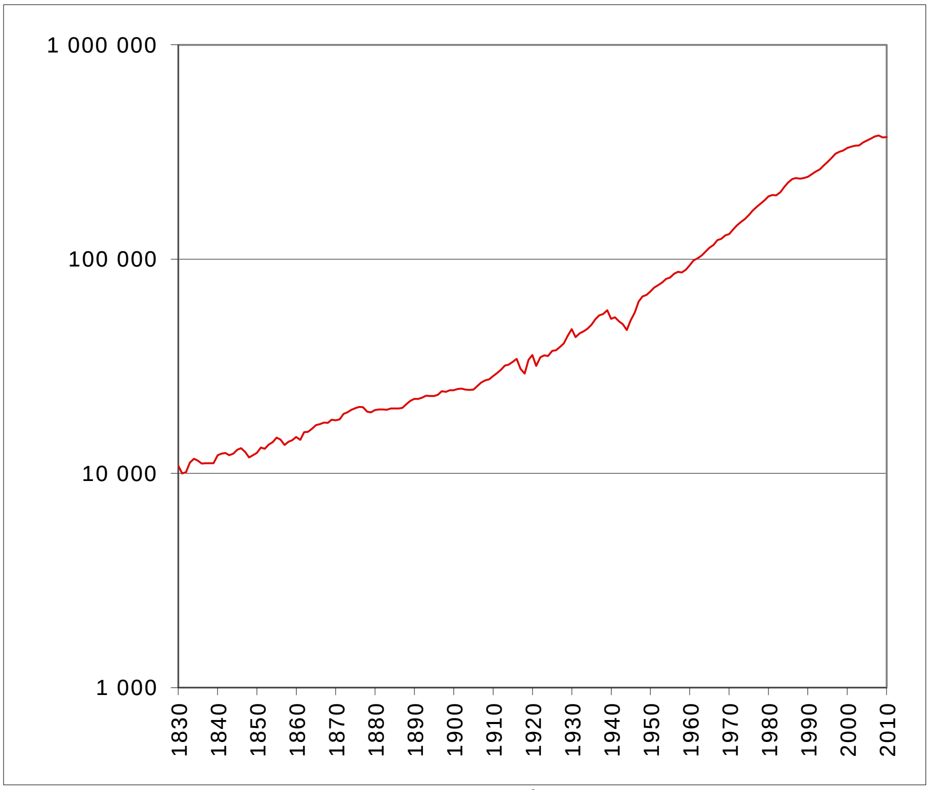
GDP contracted between two and 16 percent in most capitalist economies in 2009. Norway has so far definitely been a winner with an annual stagnation of about one percent and substantially lower unemployment rates than almost any comparable economy, with a little more than three percent unemployment in 2009. Bank losses have also been very limited in Norway so far.

Mapping of business cycles

Financial turmoil do not necessary have to go together with downturns in the real economy. This can be illustrated with the state of the Norwegian economy in 1919-1920. During these years Norway experienced both the highest growth rates and the worst stock market crash ever recorded. It is therefore of interest to map the historical relationship of financial crises and business cycles (Chart 1).

[58] URL: http://www.housepricecrash.co.uk/graphs-index.php

Chart 1. GDP for Norway 1830-2010 in 2000-NOK. (Prognosis for 2009-2010).



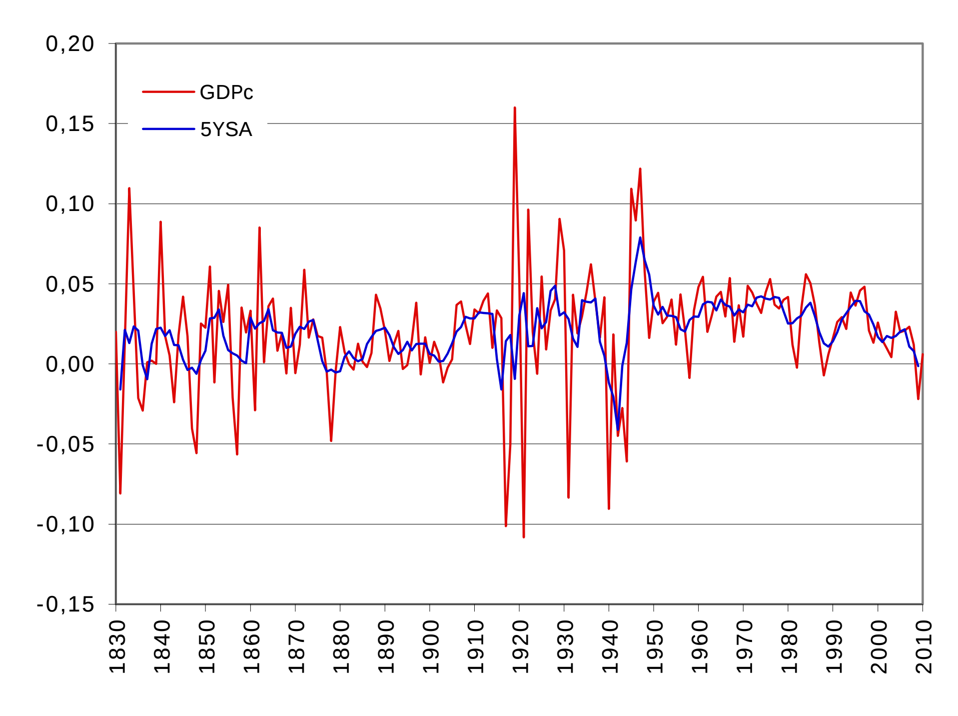
Source, Grytten, Ola H., "The gross domestic product for Norway 1830-2003", 277-280 and Statistics Norway.

In order to map historical business cycles we need output figures. In 2004 a time series of gross domestic product was published by the central bank. The series stretches back to 1830, and provides information on both the production and the expenditure side of the economy. These are constructed on the basis of a wide range of data, collected from Statistics Norway, regional reports given by public servants, the National Archive, regional archives, business archives and the Wedervang Archive on wages and prices kept at the Norwegian School of Economics and Business Administration.[59] Chart 1 reports GDP per capita volumes for Norway 1830-2008. As we can see from the graph this was basically a period of economic growth. However, the curve also reveals some turbulence, in particular during and around the two world wars.

By looking at the first order differentials, i.e. annual relative changes in per capita GDP, we get a better glimpse of good and bad years in the economy, as shown in chart 2. In order to look at more than annual cycles, we have also calculated five-year symmetric smoothing averages.

[59] Grytten, Ola H., "The gross domestic product for Norway 1830-2003", 241-288.

Chart 2. First order differentials in GDP for Norway 1830-2010 in 2000-NOK.



Source, Grytten, Ola H., "The gross domestic product for Norway 1830-2003", 277-280 and Statistics Norway.

Still, by making the time series more stationary we can supplement our findings on business cycles. Here we use a Hodrick-Prescott filter (HP-filter). The HP-filter is an algorithm for finding smoothed values, i.e., trends, of a time series. The filter separates an observed time series, here GDP per capita, $y_{t,}$ into a smoothed or a trend component, t_t, and a cyclical component, c_t, as stated in equation (1):

(1) $$y_t = t_t + c_t$$

The cyclical component measures the strength of the business cycle. The relative strength of the business cycle can, thus, be found by dividing the observed values by the trend component as stated in equation (2):

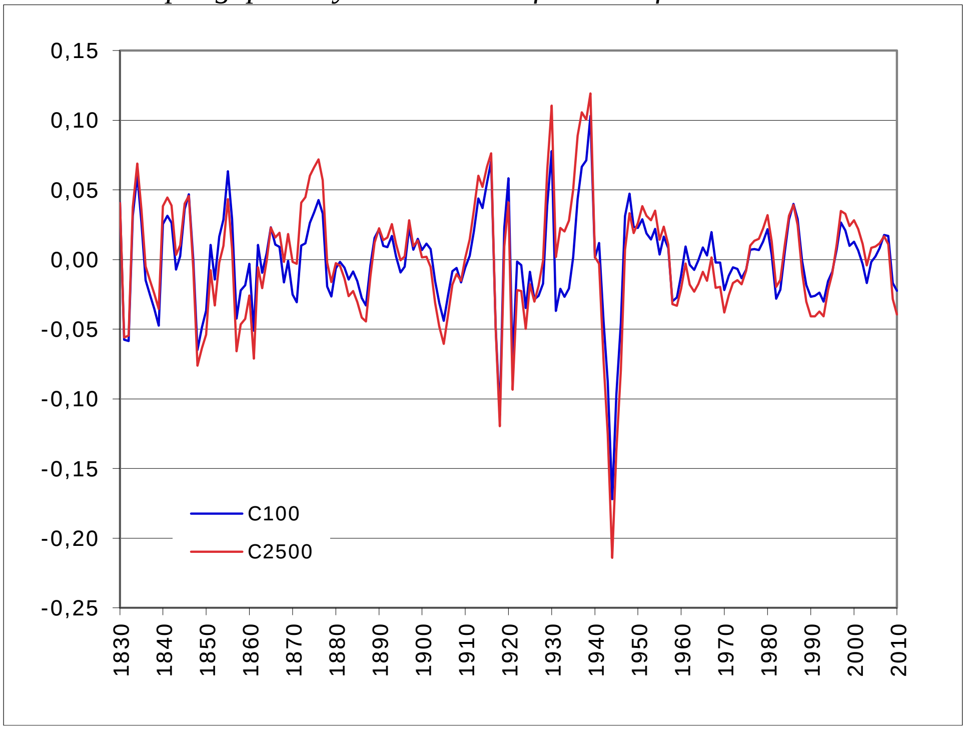
(2) $$c_t = \log y_t - \log t_t$$

According to this equation the stationary trend will be equal to zero and the cyclical component will fluctuate around this value. The objective function of the filtered series will have the form stated in (3):

(3) $$\min \sum_{t=1}^{m} c_t^2 + \lambda \sum_{t=2}^{m-1} ((t_{t+1} - t_t) - (t_t - t_{t-1}))^2$$

Here m is the number of samples and λ is the smoothing parameter, specifying the smoothness of the trend. The normal λ-value for annual data is set to 100, 1,600 for quarterly data and 14,400 for monthly data. It is argued in analyses of Norwegian business cycles that a valid λ for quarterly GDP-figures is around 40,000. That is 25 times higher than the standard λ=100. In our analysis we lack quarterly data previous to the 1970s. Thus, annual figures are used here. Hence, we apply both the standard λ=100 and λ=2,500 in our analysis. The latter gives a smoother trend and clearer cycles. Also, it makes potential end-point errors smaller. The business cycles, calculated as relative deviations from the HP-filtered trends are reported in chart 3.

Chart 3. Output gaps as cycle deviations from HP-filtered trend 1830-2010.



Source, Grytten, Ola H., "The gross domestic product for Norway 1830-2003", 277-280 and Statistics Norway.

On the basis of these graphs and we can point out nine major crises in the real economy in peacetime. All these coincide with major financial crises. This analysis confirms the views made by Kindleberger and Goldsmith, i.e. financial turmoil often comes together with heavy downturns in the business cycle.[60] In table 1 below we illustrate the strength of the recessions during these financial crises. In the table we report maximum negative cycle values for both λ=100 and λ=2,500 on our annual data. We also report the change in per capita GDP from the top to the bottom years.

In order to illustrate the strength of the recessions we also report standard deviations from the mean values for sub-periods. The first sub-period, 1830-1914, covers the independent growing Norwegian economy under a liberal era. The second period is the turbulent inter-war period of both severe crises and considerable economic growth. The final period stretches from the post World War 1 period, more precisely 1946, till present days, inclusive prognoses for 2009 and 2010.[61]

Table 1. Strength of Norwegian business cycles.

Crisis	Cycle value	Bottom year	Cycle value	Bottom year	GDP change	Bottom year
1830-1833	-0.0585	1832	-0.0560	1831	-0.0810	1831
	(2.1017)		(1.5861)		(3.1228)	
1847-1850	-0.0648	1848	-0.0761	1848	-0.0938	1848
	(2.3297)		(2.1576)		(3.5464)	
1856-1861	-0.0510	1861	-0.0711	1861	-0.0763	1857
	(1.8341)		(2.0144)		(2.9704)	
1875-1888	-0.0329	1887	-0.0443	1887	-0.0569	1879
	(1.1836)		(1.2568)		(2.3273)	
1899-1905	-0.0440	1905	-0.0605	1905	-0.0139	1904
	(1.5818)		(1.7158)		(0.9102)	
Stdev 1830-1914	0.0278		0.0353		-0.0167	
1920-1928	-0.0735	1921	-0.0933	1921	-0.1082	1921
	(1.6150)		(1.6442)		(2.5702)	
1930-1933	-0.0369	1931	0.0018	1931	-0.0835	1931
	(0.8117)		(0.0324)		(2.1315)	
Stdev 1919-1939	0.0455		0.0568		-0.0199	
1987-1993	-0.0301	1993	-0.0408	1933	-0.0071	1988
	(1.5614)		(1.5710)		(1.7557)	
2007-2010	-0.0222	2010	-0.0393	2010	-0.0220	2009
	(1.1530)		(1.5130)		(2.4345)	
Stdev 1946-2010	0.0193		0.0259		0.0095	

Source, Grytten, Ola H., "The gross domestic product for Norway 1830-2003", 277-280 and Statistics Norway.
The numbers in brackets report the size of the negative cycle or GDP per capita fall relative to standard deviations from mean values

[60] Kindleberger, Charles P. and Robert Z. Aliber, *Manias, panics and crashes*, 1-20.
[61] Grytten, Ola H., "The economic history of Norway".

Table 1 shows that the recessions were significant during all the nine financial crises. In some cases, e.g. the 1899-1905-crisis, we see that the fall in GDP per capita was smaller than the standard deviation from mean value. However, GDP stayed at a low level for several years, and, thus, the cycle values were quite low. As for other cases, e.g. the Great Depression of the 1930s, the filtered trends are not representative for the real development due to heavy turbulence during both the 1920s and World War II. Hence, the negative cycle is underestimated. However, the fall in GDP from top to bottom was more than 2.1 times higher than the standard deviation for the period.

Monetary expansion and crises

As previously shown, both Minsky and Kindleberger argue that financial crisis often follows after booms and over-heating, and financial bubbles in the economy. They also argue that these are fuelled by monetary expansion, where growth in credits seems to be the major force.[62] Thus, it is of importance to check if there is a clear link between monetary and credit expansion on the one side and booms and busts on the other side. In order to find such a relationship in Norwegian economic history we look at historical time series for the money stock, bank loans, house prices and output gaps.

Again we use data from the Historical Monetary Statistics-project. The series of money stock and bank loans are constructed by Jan Tore Klovland. Output gaps are constructed as cycles from the HP-filtered GDP-series. Again we use the figures by Ola H. Grytten. The house price index, a repeat sales-index, is constructed by Øyvind Eitrheim and Solveig K. Erlandsen.[63] The data for the series are taken from bank accounts, private archives, newspapers, public registration offices, and records from Statistics Norway. For money stock, bank loans and house prices we use first order differentials on annual data. Nominal house prices are made real by deflating them with a historical consumer price index (CPI), constructed, by Ola H. Grytten.[64]

---

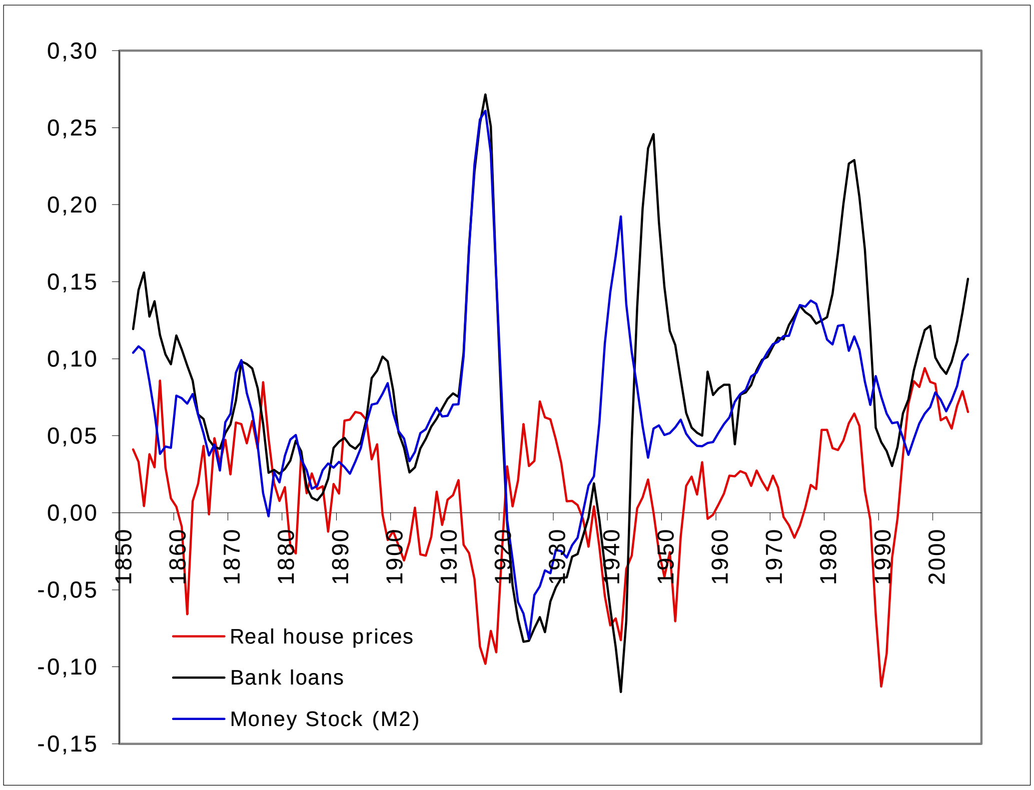
[62] Minsky, Hyman, "The Financial-Instability Hypothesis: Capitalist processes and the behavior of the economy", Kindleberger, Charles and Laffargue, Jean-P. (eds), *Financial crises: theory, history, and policy*, Cambridge University Press, Cambridge 1982, Kindleberger, Charles P. and Robert Z. Aliber, *Manias, panics and crashes*, 55-76.

[63] Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004 and Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway – Part II*, Occasional Papers No 38, Norges Bank, Oslo 2007.

[64] Grytten, Ola H., "A consumer price index for Norway 1516-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 47-98.

Chart 4 reports relative changes in the money stock, bank loans and real house prices from 1850 until 2008, calculated as changes in logs. The three graphs are presented as five-year symmetric smoothed averages. It shows rapid increase in both money stock and bank loans prior to the Crimean financial crisis, whereas the growth in both variables contracted significantly during the crisis. Real house prices first rose following the credit and monetary expansion, and thereafter contracted substantially during the financial bust from 1857 onwards. Again house prices showed a rapid increase during the money and credit expansion in the first part of the 1870s, to come significantly down when money and credit showed considerably lower growth rates from late 1870s and into the 1880s. Previous to the house market crash during the Kristiania Crisis 1899-1905 we also find money and credit booms alongside a substantial increase in real house prices.[65]

Chart 4. Relative first order differentials of real house prices, bank loans and money stock (M2) for Norway 1830-2008. Five-year symmetric moving-averages.

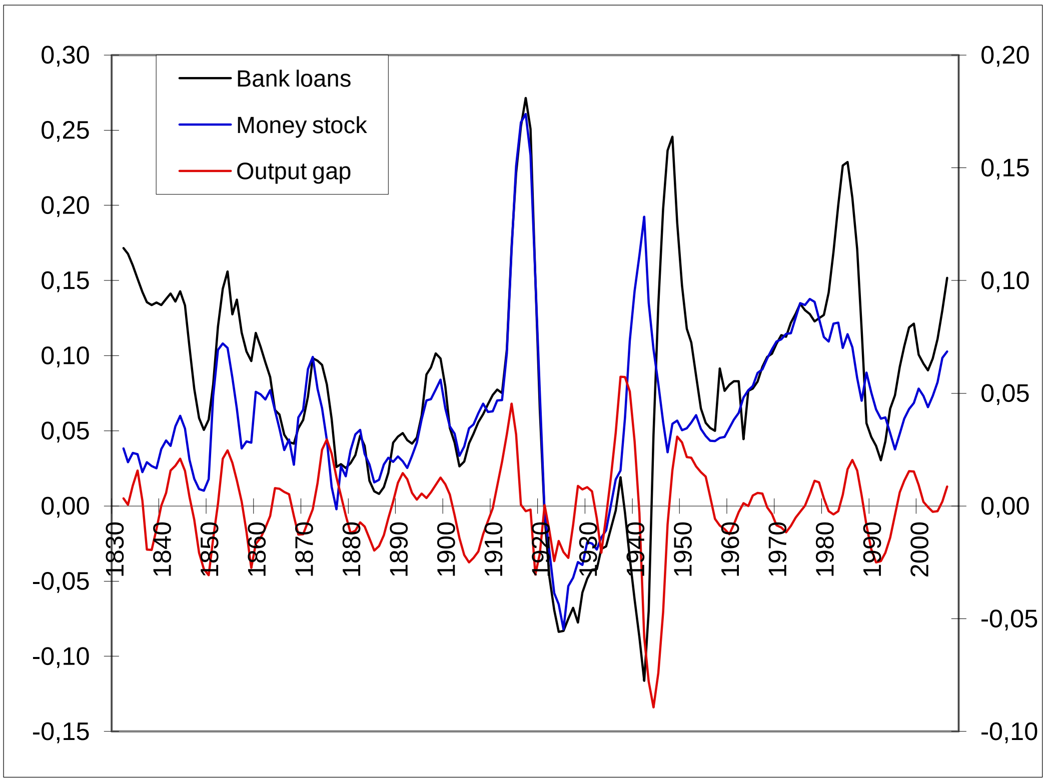


Source, URL: http://www.norges-bank.no/templates/article____42332.aspx

[65] Øksendal, Lars Fredrik, "The impact of the Scandinavian Monetary Union on financial market integration", *Financial History Review*, vol 14, No. 2, 2007, 125-148.

Real house prices also rose dramatically although with some lag after the credit and monetary boom 1914-1920. Thereafter, nominal house prices contracted with almost one fifth 1920-1927. However, the general deflation was even stronger. Thus, real house prices continued their climb until 1929. The credit and money expansion was also considerable in the 1980s. Again, house prices followed with some lag. Under the financial crisis in the late 1980s and early 1990s, both nominal and real house prices collapsed 1987-1992. Finally we find 15 years of rapid growth in both bank loans and money stock along with an almost continuous growth in real house prices for the period 1993-2007. In real terms this was the longest and strongest period of growth in credits, money stock and real estate prices ever recorded for Norway. Then, from August 2007 until the end of December 2008, house prices fell steeply with 14 percent in nominal terms and 18 percent in real terms.[66]

Chart 5. Output gap and relative first order differentials of bank loans and money stock (M2) for Norway 1830-2008. Five-year symmetric moving-averages.



Sources, URL: http://www.norges-bank.no/templates/article____42332.aspx

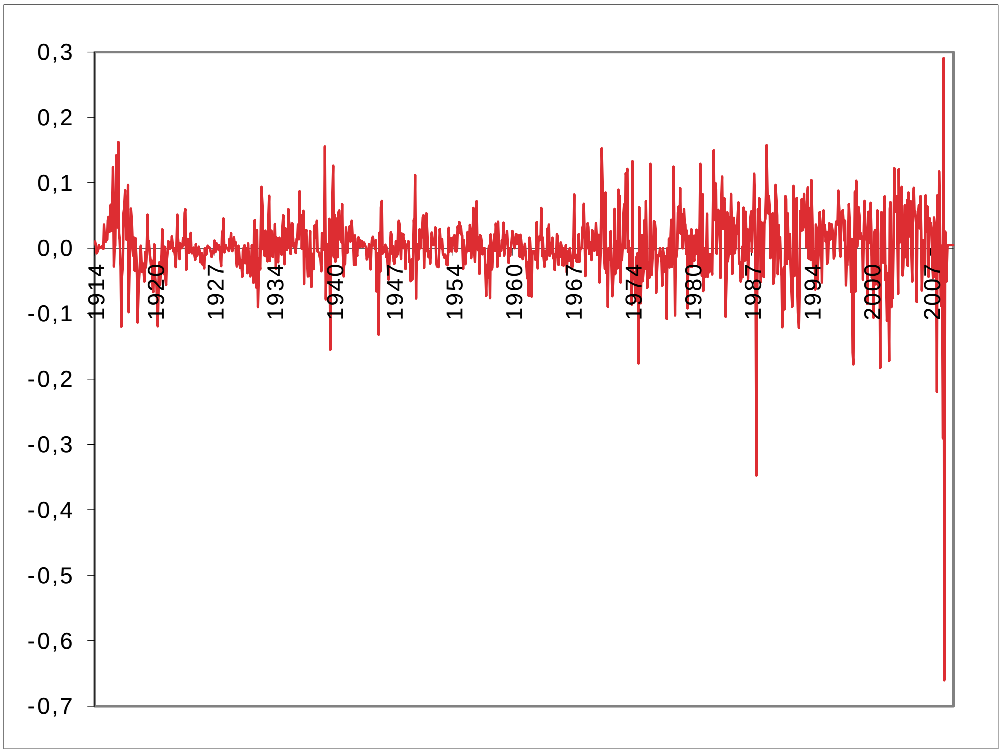
Chart 5 also reveals that over expansion and recessions during financial crises in Norway tend to follow credit expansion and stagnation. This applies for the 1848-

[66] Econ, *Eiendomsmeglerbransjens boligprisstatistikk*, NEF/EMFF, Oslo November 2009.

crisis, the Crimean crisis from 1857, the long depression in the 1870s and 1880s, the Kristinaia crisis 1899-1905, the post-war depression in the 1920, the banking crisis 1987-1993 and the current financial turmoil from 2007 and onwards.

We also know that there was huge monetary expansion and chaos previous to the troubled financial years 1816-1842, with signs of uncontrolled inflation and currency depreciation.[67] However, we do not find this pattern for the great depression of the 1930s in Norway. Nevertheless, we clearly find it internationally, in particular in North America and France.[68] Hence, again both the boom and the bust seem at least partly to be caused by over expansion in granted credits and money stock. Along with devastating financial international instability, where some countries maintained a substantial current account surplus, when others maintained persistent deficits, this led to a global melt down. The global crisis also influenced the small open Norwegian economy. However, due to better internal financial stability than in most other countries and an early abandonment of the gold standard, the crisis was milder in Norway than in most other countries.

Chart 6. Main index Oslo Stock Exchange. First differentials (logs) on monthly data.



Source, URL: http://www.nbim.no/templates/article____42941.aspx

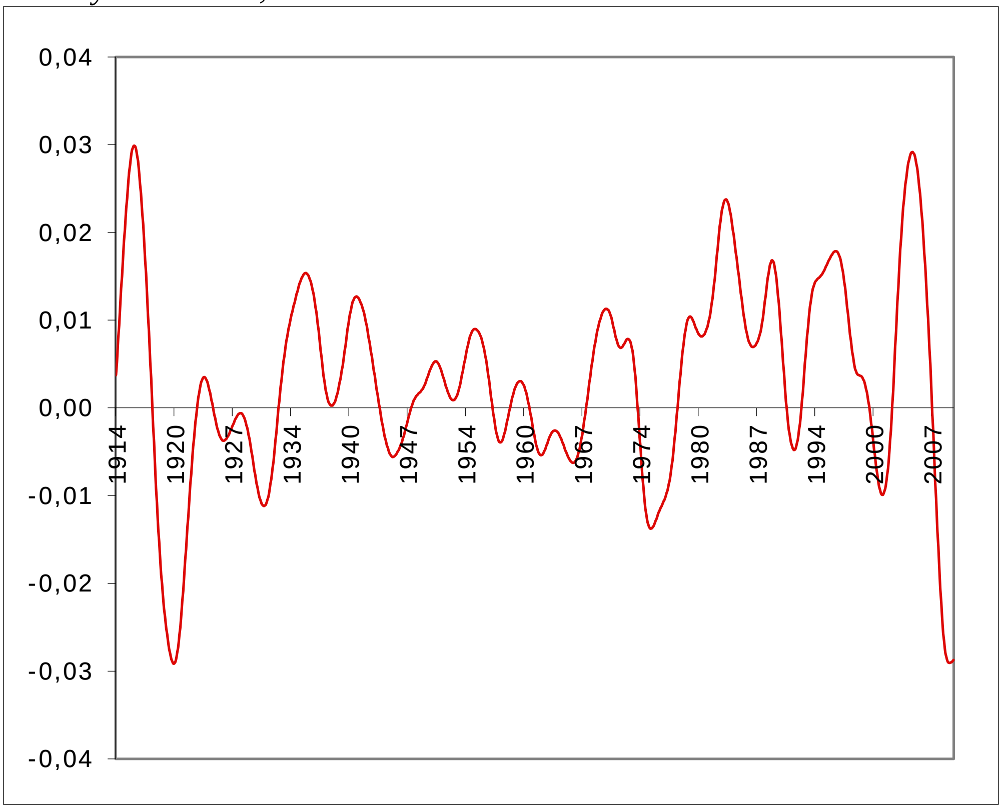
[67] Keilhau, Wilhelm, *Den norske pengehistorie*, Aschehoug, Oslo 1952, 48-61.
[68] Eichengreen, Barry, *Elusive stability: Essays in the history of international finance 1919-1939*, Cambridge University Press, Cambridge, 24-82.

In chart 6 we have plotted monthly changes in the main index at Oslo Stock Exchange. We note that the downturn during the first stock market crash, i.e., from late 1918 until the early 1920s, was a kind of a long slide downwards, whereas both the crashes in 1987 and 2008 were rapid collapses.

In order to make the trends clearer we have HP-filtered the monthly data with the standard λ-value of 14,400. This picture is drawn in chart 7. By using this smoothing parameter we clearly trace the boom of stock prices during the credit and money expansion from 1914 onwards, and thereafter the largest stock market crash ever recorded in Norway from August 1918 until February 1922.

We also find significant growth in stock prices along with considerable credit and money expansion in the 1980s before a new double crash in September to December 1987 and July 1990 to September 1992, and in of the years before the 2008 crash.

Chart 7. HP-filtered main index Oslo Stock Exchange. First differentials (logs) on monthly data. λ=14,400.



Source, URL: http://www.nbim.no/templates/article____42941.aspx

Hence, we find that the Minsky-Kindleberger argument, i.e., that financial crises and crashes historically tend to occur after liberalization in the credit markets, leading to financial instability and over-expansion. The one exception for Norway seems to be the 1930-crisis, as far as there was no credit or monetary expansion in Norway during the years prior to the 1930s. However, Norway was special in this incident. On the international arena we certainly find credit liberalization and rapid growth in bank loans and the money stock in key economies of the world. The crisis was transmitted to the open Norwegian economy by international trade, currency transactions and the gold standard.

Conclusions

The present seeks to throw light on key issues related to historical financial crisis in small open economies like the Norwegian. Experts on financial crises, like Hyman Minsky and Charles P. Kindleberger, both stress that monetary expansion through credit liberalization and increased lending activity cause financial booms and busts. They also argue that major financial crises in general have devastating effects on the real economy.

In this paper we ask if these findings also apply to Norway. We have analysed nine major historical financial crises in Norway since its independence from Denmark in 1814 till present days. In the first place, we give a brief description and discussion of each of these downturns. Secondly, by utilizing new quantitative data on historical key financial indicators we seek to map to what extent financial crises were mirrored in setbacks in output. Finally, we investigate if there typically has been a monetary expansion, mirrored in significant increases in bank loans and the money stock, prior to financial meltdowns in Norway.

We conclude that major financial crises were followed by contractions both in total output and in output gaps. We also find that domestically or international monetary expansion fueled booms prior to all major financial crises in Norway from the early nineteenth century until present.

References

Bideleux, Robert and Ian Jeffries, *A History of Eastern Europe: Crisis and Change*, Routledge, London 1998.

Calomiris, Charles W. and Larry Schweikart, "The panic of 1857: Origins, transmission, and containment". *Journal of Economic History*, vol 51, No. 4, 1991, 807–834.

Davis, Joseph, "An Improved Annual Chronology of U.S.; Business Cycles since the 1790s". *The Journal of Economic History*, vol 66, No. 1, 2006, 103–121.

Econ, *Eiendomsmeglerbransjens boligprisstatistikk*, NEF/EMFF, Oslo November 2009.

Eichengreen, Barry and Kevin O'Rourke, "A tale of two depressions", URL: http://www.voxeu.org/index.php?q=node/3421

Eitrheim, Øyvind and Solveig Erlandsen, "House price indices for Norway 1819-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers, No, 35, Norges Bank, Oslo 2004, 349-378.

Eitrheim, Øyvind, "Fra Peder Anker til stabilitet i pengevesenet", Eitrheim, Øyvind og Jan F. Qvigstad (eds), *Tilbakeblikk på norsk pengehistorie*, Occasional papers, No 37, Norges Bank, Oslo, 1-18.

Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004.

Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway – Part II*, Occasional Papers No 38, Norges Bank, Oslo 2007.

Eitrheim, Øyvind, Ola H. Grytten and Jan T. Klovland, “Historical monetary statistics for Norway – some cross checks of the new data”, Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway – Part II*, Occasional Papers, No. 38, Norges Bank, Oslo 2007, 385-418.

Eurostat and OECD, URL: http://stats.oecd.org/index.aspx?queryid=350

Fischer, Lewis R., and Helge W. Nordvik, “Maritime transport and the integration of the North Atlantic Economy, 1850-1914”, Fischer, Wolfram et al, *The Emergence of a World Economy*, KCW, Wiesbaden 1986, 526-551.

Gerdrup, Carsten, "Three episodes of financial fragility in Norway since the 1890s". *BIS Working Papers*, No. 142, 2003. Basel.

Goldsmith, Raymond W., *The National Balance Sheet of the United States*, National Bureau of Economic Research, University of Chicago Press, 1982.

Grytten, Ola H. and Camilla Brautaset, “Family households and unemployment in Norway during years of crisis: new estimates 1926-1939, *The History of the Family*, vol 5, No. 1, 23-53.

Grytten, Ola H., “A consumer price index for Norway 1516-2003”, Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 47-98.

Grytten, Ola H., “A Norwegian consumer price index 1819–1913 in a Scandinavian perspective”, *European Review of Economic History*, vol 8, 2004, 61-79.

Grytten, Ola H., “Boligboble? Empiriske indikatorer i historisk perspektiv”, *Magma*, vol 12, No. 5, 2009, 26-39.

Grytten, Ola H., “Boligkrakk og finanskrise i historisk perspektiv”, *Samfunnsøkonomen*, vol. 63, No. 4, 2009, 39-50.

Grytten, Ola H., “The economic history of Norway”, URL: http://eh.net/encyclopedia/article/grytten.norway

Grytten, Ola H., “The gross domestic product for Norway 1830-2003”, Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 241-288.

Grytten, Ola H., “Why was the great depression not so great in the Nordic countries?”, *Journal of European Economic History*, vol. 37, No. 2, 1988.

Hanisch, Tore Jørgen, Espen Søilen and Gunnhild Ecklund, *Norsk økonomisk politikk i det 20. århundre*, Kristiansand, Høyskoleforlaget 1999.

Hodne, Fritz and Ola H. Grytten, *Norsk økonomi i det 19. århundre*, Fagbokforlaget, Bergen 2000.

Hodne, Fritz and Ola H. Grytten *Norsk økonomi i det 20. århundre*, Fagbokforlaget, Bergen 2002.

Johnsen, Berit Eide, *Rederistrategi i endringstid: sørlandsk skipsfart fra seil til damp og motor, fra trew til jern og stål 1875-1925*, University of Bergen, Bergen 1998.

Kindleberger, Charles P. and Robert Z. Aliber, *Manias, Panics and Crashes: A History of Financial Crises*, Palgrave, New York 2005.

Kindleberger, Charles P., *The World in Depression: 1929-1939*, University of California Press, LA 1986, 288-306.

Kindleberger, Charles P. and J.-P. Laffargue (eds), *Financial Crises: Theory, History and Policy*, Cambridge University Press, Cambridge 1982,

Klovland, Jan T., “A chronology of cycles in real economic activity for Norway, 1867-1914”, *Scandinavian Economic History Review*, No 3, 1989, 24-51.Klovland, Jan T., “Historical stock price indices in Norway 1914-2003”, Eitrheim, Øyvind, Jan

T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 329-348.

Klovland, Jan T., "Historical stock price indices in Norway 1914-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers, No, 35, Norges Bank, Oslo 2004, 329-348.

Klovland, Jan T., "Monetary aggregates in Norway 1819-2003", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway 1819-2003*, Occasional Papers No 35, Norges Bank, Oslo 2004, 181-240.

Klovland, Jan T., "Monetary policy and business cycles in the interwar years: the Scandinavian experience", *European Review of Economic History*, vol. 2, No. 3, 1998, 309-344.

Klovland, Jan T., "New evidence on the causes of the fluctuations in ocean freight rates in the 1850s", *Explorations in Economic History*, vol 46, 2009.

Klovland, Jan T., "Short term interest rates in Norway 1818-2007", Eitrheim, Øyvind, Jan T. Klovland and Jan F. Qvigstad (eds), *Historical Monetary Statistics for Norway- Part II*, Occasional Papers, No 38, Norges Bank, Oslo 2007, 42-108.

Knutsen, Sverre and Gunnhild Ecklund, *Vern mot kriser: norsk finanstilsyn gjennom 100 år*, Fagbokforlaget, Bergen 2000.

Knutsen, Sverre, "Kristianiakrisen 1899: En revurdering av den historiske litteraturens årsaksforklaringer", Oslo University, Oslo 2007.

Maddison, Angus, *The World Economy: Historical statistics*, OECD, Paris 2006.

Merriman, John, *A History of Modern Europe: From the Renaissance to the Present*. W.W. Norton, New York, 1996.

Minsky, Hyman, "The Financial-Instability Hypothesis: Capitalist processes and the behavior of the economy", Kindleberger, Charles and Laffargue, Jean-P. (eds), *Financial crises: theory, history, and policy*, Cambridge University Press, Cambridge 1982.

Minsky, Hyman, “The financial instability hypothesis: Capitalistic process and the behaviour of the economy”, Kindleberger, Charles P. and J.-P. Laffargue (eds), *Financial Crises: Theory, History and Policy*, Cambridge University Press, Cambridge 1982, 13-29.

Musson, A.E., "The Great Depression in Britain, 1873-1896: A Reappraisal". *The Journal of Economic History*, vol 19, No 2, 1959, 199–228.

Øksendal, Lars Fredrik, “The impact of the Scandinavian Monetary Union on financial market integration”, *Financial History Review*, vol 14, No. 2, 2007, 125-148.

Parliament Proposition 43/1890, Ministry of Domestic Affairs, Kristiania 1890.

Røed, Larsen, Erling and Jon Mjølhus, *Finanskrise!: lånefest, boligboble – og dagen derpå*, Gyldendal, Oslo 2009.

Romer, Christina D., "World War I and the postwar depression; A reinterpretation based on alternative estimates of GNP". *Journal of Monetary Economics*, vol 22, No. 1, 1988, 91-115.

Rygg, Nicolai, *Norges Banks historie*, vol I, Norges Bank, Kristiania 1918.

Seip, Jens Arup, “Saint Simon, Credit Mobilier og Den norske Creditbank*”, Historisk tidsskrift*, vol 36, 1957, 513-538.

Søbye, Espen: ”Kristianiakrakket 1899”, *Samfunnsspeilet*, No. 1, 1999.

Søilen, Espen, *Hvorfor gikk det galt?: statens rolle i utviklingen av norsk næringsliv etter 1945*, Gyldendal, Oslo 2002.

Sorkin, Andrew Ross, *Too Big to Fail: Inside the Battle to Save Wall Street*, Allen Lane, New York/London 2009.

Stortingsmelding 39/1993, *Bankkrisen og utviklingen i den norske banknæringen*, Finansdepartementet, Oslo 1994.

Tocqueville, Alexis de 1893. *Recollections: The French Revolution of 1848*. Doubleday, Garden City NY 1970.

Zandi, M., Financial shock: *A 360 degree look at the subprime mortgage implosion and how to avoid the next financial crisis*, FT Press, Upper Saddle River, NY 2009.